

REMARKS

Claims 1-17 are pending in the present application. Independent claims 1 and 12 have been amended. Support for the proposed amendments may be found at least in Figures 1-2 and the related discussion in the text. For example, switch 108 may uncouple amplifier 118D and antenna element 120D from radio 102. Amplifier 118D and antenna element 120D are then coupled to radio 104, which is serving another sector and this sector has therefore been expanded to include a fifth sub-sector. Thus, the angular extent associated with the radio 104 has been modified. See, *e.g.*, Patent Application, page 9, ll. 4-6 and page 10, ll. 2-3, as well as Figures 1-2. No new matter has been added.

Claims 1-5, 7, and 9-17 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Ward (U.S. Patent No. 6,104,930) in view of Hagan, et al (U.S. Patent No. 6,453,176). Claim 6 was rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Ward and Hagan in view of Feuerstein, et al (U.S. Patent No. 6,141,565). Claim 8 was rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Ward and Hagan in view of Lopes, et al (U.S. Patent No. 6,453,176). Claims 12-17 are also rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Smith, et al (U.S. Patent No. 5,021,801) in view of Ward.

A finding of obviousness under 35 U.S.C. § 103 requires a determination of the scope and content of the prior art, the level of ordinary skill in the art, the differences between the claimed subject matter and the prior art, and whether the differences are such that the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made. *Graham v. John Deere Co.*, 148 USPQ 459 (U.S. S.Ct. 1966).

To determine whether the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made, one should determine whether the

prior art reference (or references when combined) teach or suggest all the claim limitations. Furthermore, it is necessary for the Examiner to identify the reason why a person of ordinary skill in the art would have combined the prior art references in the manner set forth in the claims. The required reason may be provided by some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Thus, the absence of a suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings may be evidence that the claims are not obvious. Teaching away by the prior art may constitute *prima facie* evidence that the claimed invention is not obvious.

Ward describes four spatially fixed downlink radiation beams, each having an angular beamwidth of around 30°. Ward also describes a control unit 805 for allocating carrier frequencies to the beams. See Ward, col. 9, ll. 55-67. The control unit 805 may increase or decrease the number of carrier frequencies based on the capacity associated with each of the spatially fixed beams. See Ward, col. 10, ll. 11-22. However, Ward is completely silent with regard to modifying the angular extent of the spatially fixed beams. To the contrary, Ward states that each transceiver may be allocated to one of the spatially fixed beams and “at any one time one transceiver can reside on only one beam in a sector.” See Ward, col. 7, ll. 9-10. Consequently, Applicants respectfully submit that the angular extent of the transmissions associated with each transceiver described by Ward remains spatially fixed.

Furthermore, Ward does not seem to be concerned with the inter-operation of multiple radios that serve different sectors. Figure 8 in Ward only shows a single beamformer matrix 807 that appears to be associated with a single radio, although this radio is not depicted in Figure 8.

The antennas 806 that are coupled to the beamformer matrix 807 serve a single sector. Thus, changing the association of transceivers 800 to antennas 807 would not change the angular extent of the sector served by the antennas 800 and the associated radio. Ward therefore fails to describe or suggest switching antenna element between radios to modify the angular extent of transmission associated with the radios.

Accordingly, Applicants respectfully submit that Ward does not describe or suggest a switch matrix for coupling or uncoupling an amplifier to the at least one radio to modify at least one angular extent of transmission associated with the radio by modifying the number of antennas coupled to at least one radio, as set forth in independent claim 1. Applicants also submit that Ward does not teach or suggest a switch matrix to modify at least one angular extent of various portions served by the equipment by modifying the number of antennas coupled to at least one radio to meet the capacity demands of the various portions, as set forth in independent claim 12.

Hagan describes a linear power amplifier system that can modify the number of power amplifier modules to change the amount of power output by a transmission unit of the base station or to provide continued operation if an amplifier fails. In one embodiment, a spare amplifier 1140 can be dedicated to a first sector because of a failure of a module main amplifier. The spare amplifier 1140 may be dedicated to the first sector at the same time that a second sector is experiencing a failure of its module main amplifier. In that case, allocation of the resources of the spare amplifier can be switched between the two sectors at any time if it is determined that it is necessary or more beneficial to perform the switching. See Hagan, col. 9, ll. 45-48. However, Hagan is also completely silent with regard to modifying the spatial extent of the sectors by modifying the number of antennas coupled to a radio. Applicants therefore

respectfully submit that Hagan does not describe or suggest a switch matrix for coupling or uncoupling an amplifier to the at least one radio to modify at least one angular extent of transmission associated with the radio by modifying the number of antennas coupled to at least one radio, as set forth in independent claim 1. Applicants also submit that Hagan does not teach or suggest a switch matrix to modify at least one angular extent of various portions served by the equipment by modifying the number of antennas coupled to at least one radio to meet the capacity demands of the various portions, as set forth in independent claim 12.

Thus, Applicants respectfully submit that the prior art of record fails to teach or suggest all the limitations of independent claims 1 and 12, or the claims depending therefrom. Furthermore, the prior art of record fails to provide any suggestion or motivation to modify or combine the cited references to arrive at the claimed invention. To the contrary, Ward teaches that the beams are spatially fixed and “at any one time one transceiver can reside on only one beam in a sector.” See Ward, col. 7, ll. 9-10. Thus, Applicants submit that Ward teaches away from modifying at least one angular extent of transmission associated with a radio, as set forth in the pending claims. It is by now well established that teaching away by the prior art may be evidence that the claimed invention is not obvious. Applicants further submit that the Examiner has failed to provide any reason why a person of ordinary skill in the art would be motivated to modify the prior art of record to include modifying the angular extent of radio transmissions by modifying the number of antennas coupled to at least one radio in the manner set forth in the pending claims.

The Examiner relies upon Feuerstein to describe establishing thresholds, Lopes to describe a controller that is a digital signal processor, and Smith to describe techniques for

allocating communication equipment. However, Applicants respectfully submit that these references all fail to remedy the fundamental deficiencies of Ward and/or Hagan.

For at least the aforementioned reasons, Applicants respectfully submit that the Examiner has failed to make a *prima facie* case that the present invention is obvious over the prior art of record. Applicants respectfully request that the Examiner's rejections of claims 1-17 under 35 U.S.C. § 103(a) be withdrawn.

For the aforementioned reasons, it is respectfully submitted that all claims pending in the present application are in condition for allowance. The Examiner is invited to contact the undersigned at (713) 934-4052 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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